Supporting Decisions with Evidence:

Using the What Works Clearinghouse

Presentation Outline

- Overview of the WWC: Mission & Objectives
- WWC Products: What they are & how they can be used
  - -- Intervention Reports
  - -- Practice Guides
  - -- Quick Reviews
- Discussion: How use evidence in day-to-day decision-making? How can the WWC be useful?

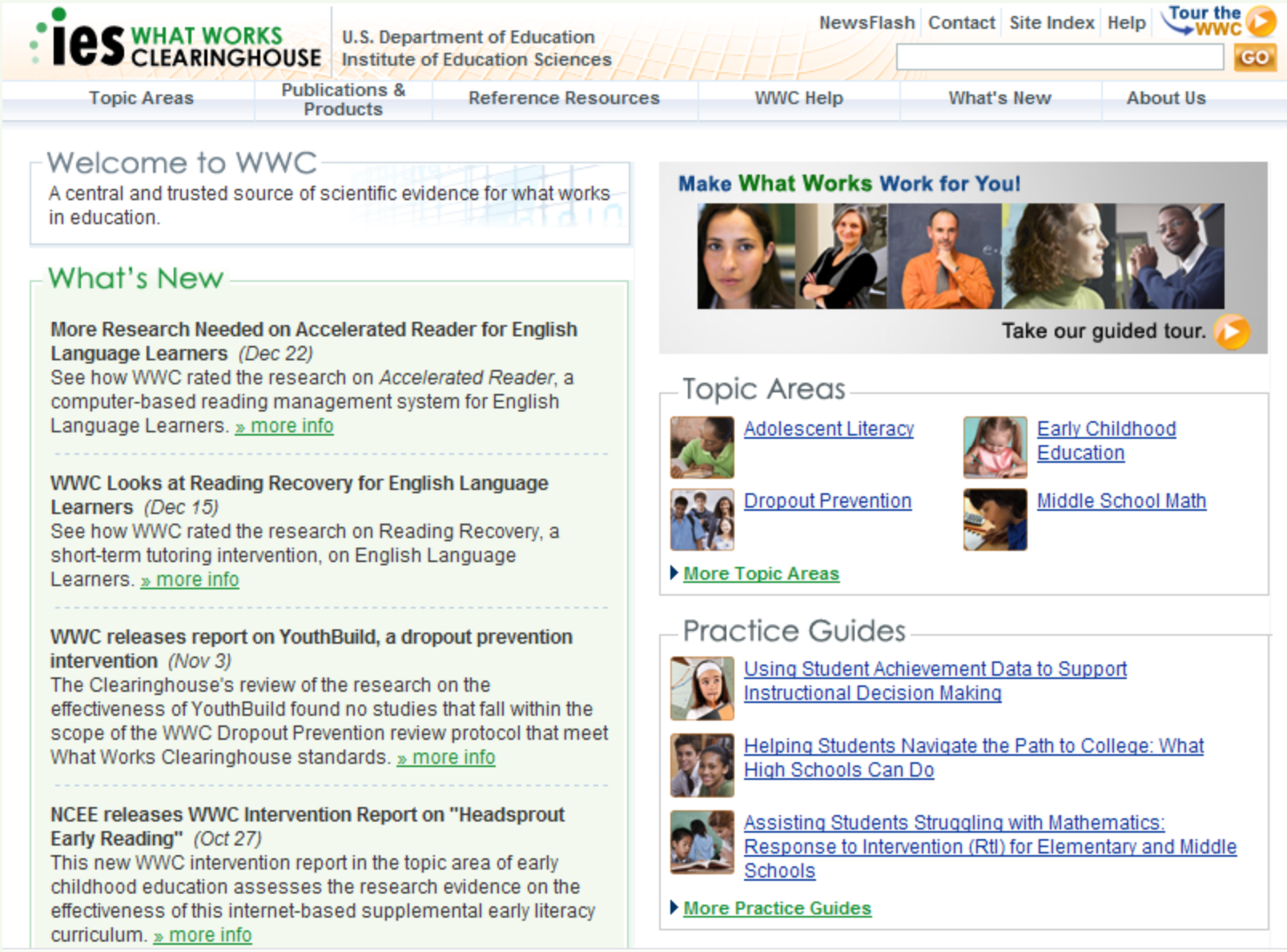
Problem & Context

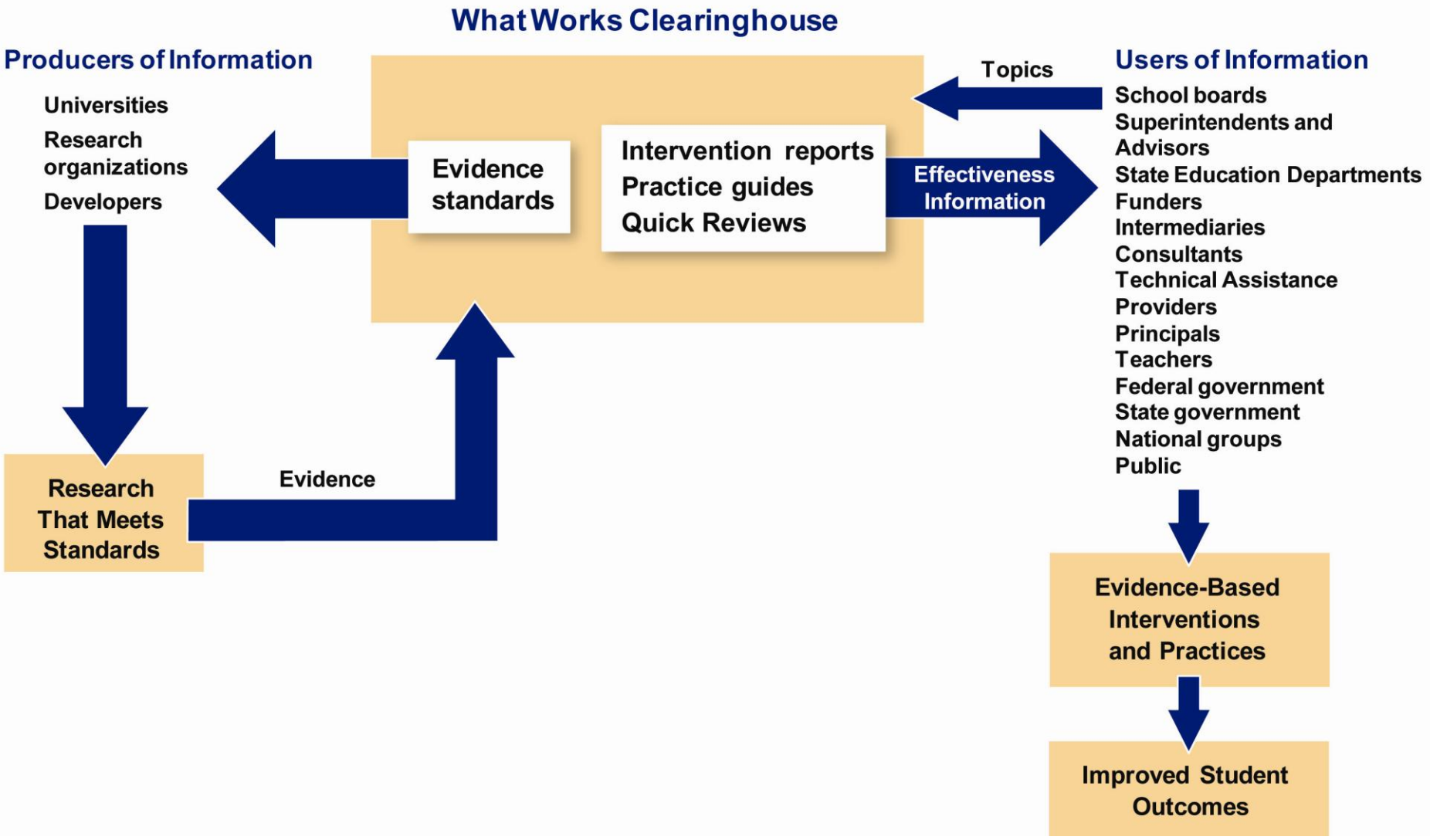
- Substantial amount of research on education practices, programs, and policies
- Studies are uneven in quality
- Summarized in several different places
- No sense of evidence standards used to assess quality
- Requires lots of effort to synthesize and use the information
- Decision-making often based on personal experience and ideology rather than on a strong research base

WWC Connects Educators with the Best Research on Effective Interventions & Practices in Education

- **Initiative of the U.S. Department of Education's Institute of Education Sciences**
- **Central and trusted source of scientific evidence for what works in education**
  - Develops and implements standards for reviewing and synthesizing education research
  - Assesses the rigor of research evidence on the effectiveness of interventions
  - Summarize findings on website “whatworks.ed.gov”

The What Works Clearinghouse




What Works Clearinghouse
Producers of Information
Universities
Research organizations
Developers
Evidence standards
Intervention reports
Practice guides
Quick Reviews
Topics
Effectiveness Information
Users of Information
School boards
Superintendents and Advisors
State Education Departments
Funders
Intermediaries
Consultants
Technical Assistance Providers
Principals
Teachers
Federal government
State government
National groups
Public
Research That Meets Standards
Evidence
Evidence-Based Interventions and Practices
Improved Student Outcomes

Key Features of the WWC

- WWC does not directly assess programs, policies, or practices
- Rather, WWC reviews and reports on the findings from existing research
  - Assesses "quality" of existing research
  - Reports on what the research meeting standards indicates about "effectiveness"
- WWC does not recommend certain interventions in favor of others (no conflict of interest)

Welcome to W

A central and trusted so hat works in education.

What's New

More Research Needed on Accelerated Reader for English Language Learners *(Dec 22)*
See how WWC rated the research on *Accelerated Reader*, a computer-based reading management system for English Language Learners. » more info

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Make What Works Work for You!

Take our guided tour.

Topic Areas


Adolescent Literacy


Early Childhood Education


Dropout Prevention


Middle School Math

More Topic Areas

Practice Guides


Using Student Achievement Data to Support Instructional Decision Making


Helping Students Navigate the Path to College: What High Schools Can Do


Assisting Students Struggling with Mathematics: Response to Intervention (RtI) for Elementary and Middle Schools

More Practice Guides

What Products are Available?

- Intervention Reports
  - Review of the literature about a specific product or practice
- Quick Reviews
  - Review of a specific study that has received recent attention
- Practice Guides
  - Recommended practices for specific challenges based on evidence from the literature

Intervention Reports

Elementary School Math
Middle School Math
Beginning Reading
Dropout Prevention
Early Childhood Education
English Language Learners
Adolescent Literacy
Students with Learning Disabilities
Other topic areas

- Accelerated Reader
- Daisy Quest
- Ladders to Literacy
- Peer Assisted Learning Strategies
- Reading Recovery
- Saxon Phonics
- Stepping Stones to Literacy
- *Etc. (over 150 more…)*

New WWC Topic Areas

- Adolescent Literacy
- High School Math
- High School Science
- Teacher Professional Development
- Writing
- Out of School Time
- Students w/ Learning Disabilities
- EC Education for Children with Disabilities
- Children w/ Emotional & Behavioral Disorders
- Students w/ Intellectual Disabilities
- Autism

What is an Intervention Report?

- **Focus on a product or specific practice, often a branded product like a curriculum**
- **Conduct an exhaustive search of all studies focused on that product or practice**
- **Review the literature and identify the studies that meet WWC standards**
- **Summarize the findings from the studies that meet WWC standards**

WWC Intervention Report *Reading Recovery*® is a short-term tutoring intervention

Four studies of *Reading Recovery*® meet What Works Clearinghouse (WWC) evidence standards, and one study meets WWC evidence standards with reservations. The five studies included

eving (bottom 20%) first-grade

ecovery® are to promote

of first-grade students who are

Alphabetics	*Fluency*	*Comprehension*	*General reading achievement*
Positive effects	Potentially positive effects	Potentially positive effects	Positive effects
Average: +34 percentile points Range: –10 to +50 percentile points	Average: +46 percentile points Range: +32 to +49 percentile points	Average: +14 percentile points Range: +6 to +21 percentile points	Average: +32 percentile points Range: –5 to +50 percentile points

evidence standards with reservations. The five studies included approximately 700 first-grade students in more than 46 schools across the United States.[3]

alphabetics, small for fluency and comprehension, and medium to large for general reading achievement.

Effectiveness

Reading Recovery® was found to have positive effects on alphabetics and general reading achievement and potentially positive effects on fluency and comprehension.

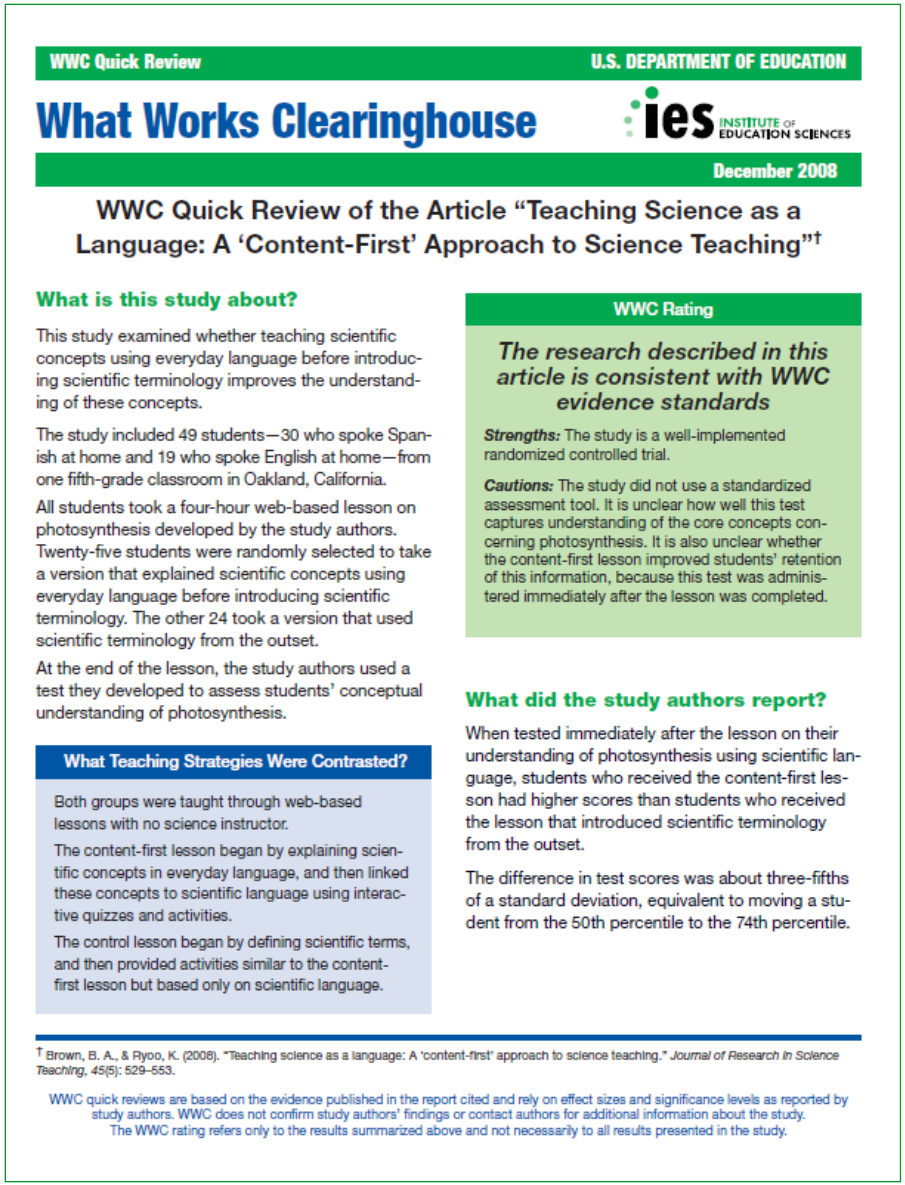
	Alphabetics	*Fluency*	*Comprehension*	*General reading achievement*
Rating of effectiveness	Positive effects	Potentially positive effects	Potentially positive effects	Positive effects
Improvement index[4]	Average: +34 percentile points Range: –10 to +50 percentile points	Average: +46 percentile points Range: +32 to +49 percentile points	Average: +14 percentile points Range: +6 to +21 percentile points	Average: +32 percentile points Range: –5 to +50 percentile points

1. This report has been updated to include reviews of 28 studies that have been released since 2005. Of the additional studies, 16 were not within the scope of the protocol and 12 were within the scope of the protocol but did not meet evidence standards. A complete list and disposition of all studies reviewed are provided in the references.
2. The descriptive information for this program was obtained from a publicly available source: the program's website (http://www.readingrecovery.org, downloaded September 2006). The WWC requests developers to review the program description sections for accuracy from their perspective. Further verification of the accuracy of the descriptive information for this program is beyond the scope of this review.
3. The evidence presented in this report is based on available research. Findings and conclusions may change as new research becomes available.
4. These numbers show the average and range of student-level improvement indices for all findings across the studies.

Reporting

Intervention ▲	Improvement Index ⇩	Evidence Rating ▲	Extent Of Evidence ▲
Early Intervention in Reading (EIR)®	36	+	Small
Reading Recovery®	34	++	Medium to Large
Stepping Stones to Literacy	30	++	Small
Earobics®	25	++	Small
Ladders to Literacy	25	+	Medium to Large
DaisyQuest	23	++	Small
Peer-Assisted Learning Strategies (PALS)©	19	+	Small
Waterford Early Reading Program	19	+	Small
Kaplan SpellRead	18	++	Small

WWC QUICK REVIEWS



WWC Quick Review | U.S. DEPARTMENT OF EDUCATION

What Works Clearinghouse | ies INSTITUTE OF EDUCATION SCIENCES

December 2008

WWC Quick Review of the Article "Teaching Science as a Language: A 'Content-First' Approach to Science Teaching"†

What is this study about?

This study examined whether teaching scientific concepts using everyday language before introducing scientific terminology improves the understanding of these concepts.

The study included 49 students—30 who spoke Spanish at home and 19 who spoke English at home—from one fifth-grade classroom in Oakland, California.

All students took a four-hour web-based lesson on photosynthesis developed by the study authors. Twenty-five students were randomly selected to take a version that explained scientific concepts using everyday language before introducing scientific terminology. The other 24 took a version that used scientific terminology from the outset.

At the end of the lesson, the study authors used a test they developed to assess students' conceptual understanding of photosynthesis.

What Teaching Strategies Were Contrasted?

Both groups were taught through web-based lessons with no science instructor.

The content-first lesson began by explaining scientific concepts in everyday language, and then linked these concepts to scientific language using interactive quizzes and activities.

The control lesson began by defining scientific terms, and then provided activities similar to the content-first lesson but based only on scientific language.

WWC Rating

The research described in this article is consistent with WWC evidence standards

Strengths: The study is a well-implemented randomized controlled trial.

Cautions: The study did not use a standardized assessment tool. It is unclear how well this test captures understanding of the core concepts concerning photosynthesis. It is also unclear whether the content-first lesson improved students' retention of this information, because this test was administered immediately after the lesson was completed.

What did the study authors report?

When tested immediately after the lesson on their understanding of photosynthesis using scientific language, students who received the content-first lesson had higher scores than students who received the lesson that introduced scientific terminology from the outset.

The difference in test scores was about three-fifths of a standard deviation, equivalent to moving a student from the 50th percentile to the 74th percentile.

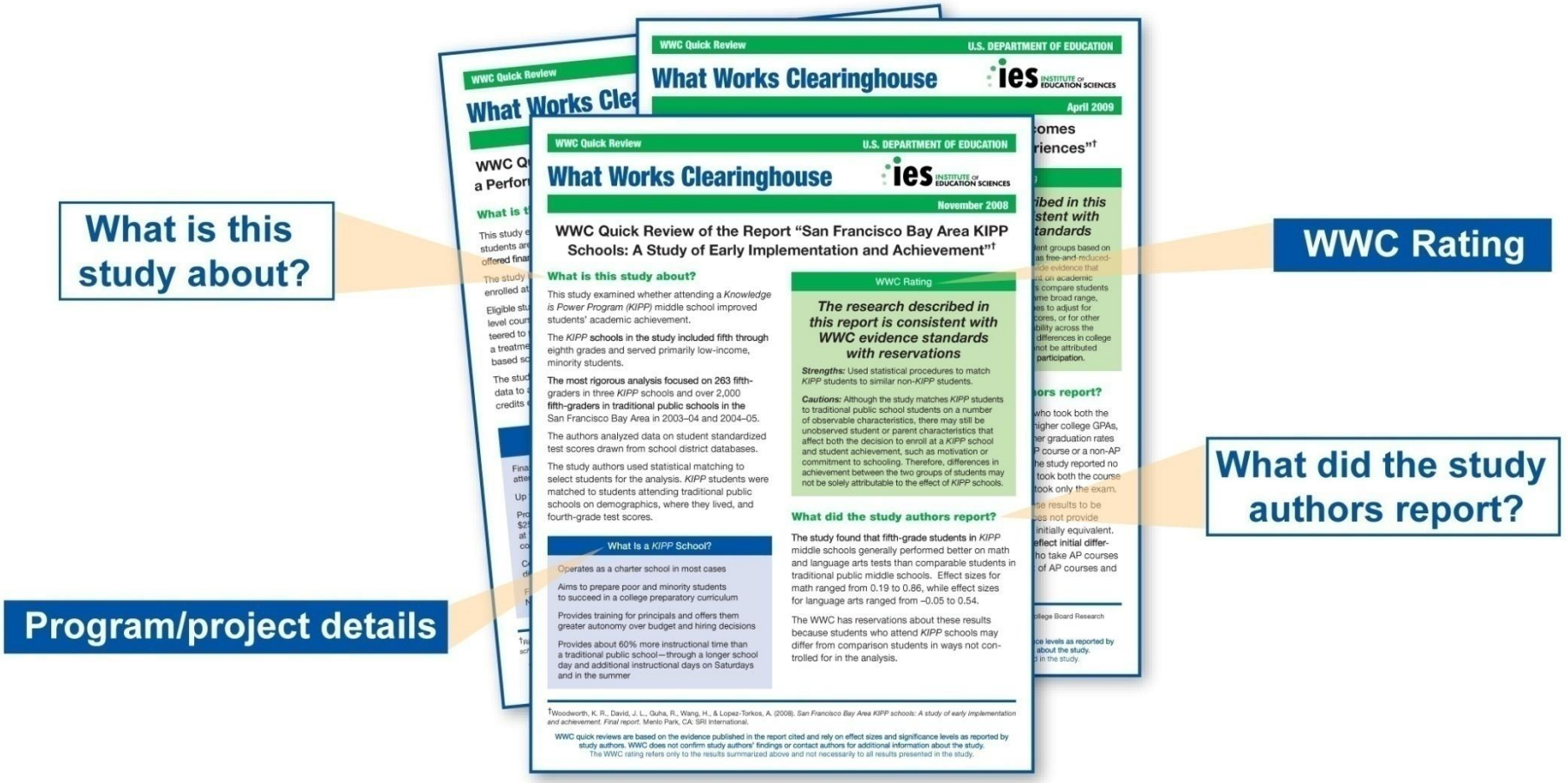
† Brown, B. A., & Ryoo, K. (2008). "Teaching science as a language: A 'content-first' approach to science teaching." *Journal of Research in Science Teaching, 45*(5): 529–553.

WWC quick reviews are based on the evidence published in the report cited and rely on effect sizes and significance levels as reported by study authors. WWC does not confirm study authors' findings or contact authors for additional information about the study. The WWC rating refers only to the results summarized above and not necessarily to all results presented in the study.

Quick Reviews

- Identify a recently-released education study that has been publicized by a major news outlet
- Review the study to determine whether it meets WWC standards
- Summarize the findings in a one-page review, identifying strengths and cautions

Quick Reviews



WWC Practice Guides

Practice Guides

Recommendations for addressing current challenges in education

Developed by an expert panel

Practitioner focused

Practice Guides Include:

- Concrete how-to steps
- Rating of strength of evidence
- Solutions for common roadblocks

12 WWC Practice Guides

- Using Response to Intervention (RtI) for Reading
- Using Response to Intervention (RtI) for Math
- Helping Students Navigate the Path to College
- Using Data to Support Instructional Decisionmaking
- Structuring Out of School Time
- Reducing Behavior Problems

12 WWC Practice Guides (Continued)

- Dropout Prevention
- Literacy Instruction for English Language Learners
- Encouraging Girls in Math and Science
- Turning Around Low Performing Schools
- Improving Adolescent Literacy
- Organizing Instruction to Improve Student Learning

Three More by September 2010

Including:

- Teaching Fractions
- Promoting Reading Comprehension for Beginning Readers
- Teaching Writing

Developing Recommendations

- Panels meet multiple times
- Panelists develop recommendations
- Staff summarize research
- Levels of evidence assigned
- Guides undergo peer review

Levels of Evidence

- ***Strong***: **High confidence (multiple rigorous studies in a variety of contexts)**
- ***Moderate:*** **Some evidence (may not work in all settings)**
- ***Low:*** **Hasn't been proven with rigorous research (but panel still thinks it is important)**

supporting this recommendation to be *moderate*. A number of single-subject research studies demonstrate the effectiveness of behavioral interventions that are designed to address and modify what prompts and reinforces the problem behaviors of special and general education elementary school students.[1] Three

context are more likely to yield positive outcomes than an intervention applied without attention to the factors prompting

1. Much of the evidence for this recommendation is from studies involving students with school-identified emotional and behavioral disabilities—some receiving a majority of their education in self-contained classrooms. The panel believes

to those exhibited by students without school-identified disabilities in the general education population. Studies include Broussard and Northup (1995); Ervin et al. (2000); Lane et al. (2007); Moore, Anderson, and Kumar (2005); Sasso et al. (1992); Stahr et al. (2006); Umbreit (1995). For research reviews, see Ervin et al. (2001); Heckaman et al. (2000); Kern et al. (2002).

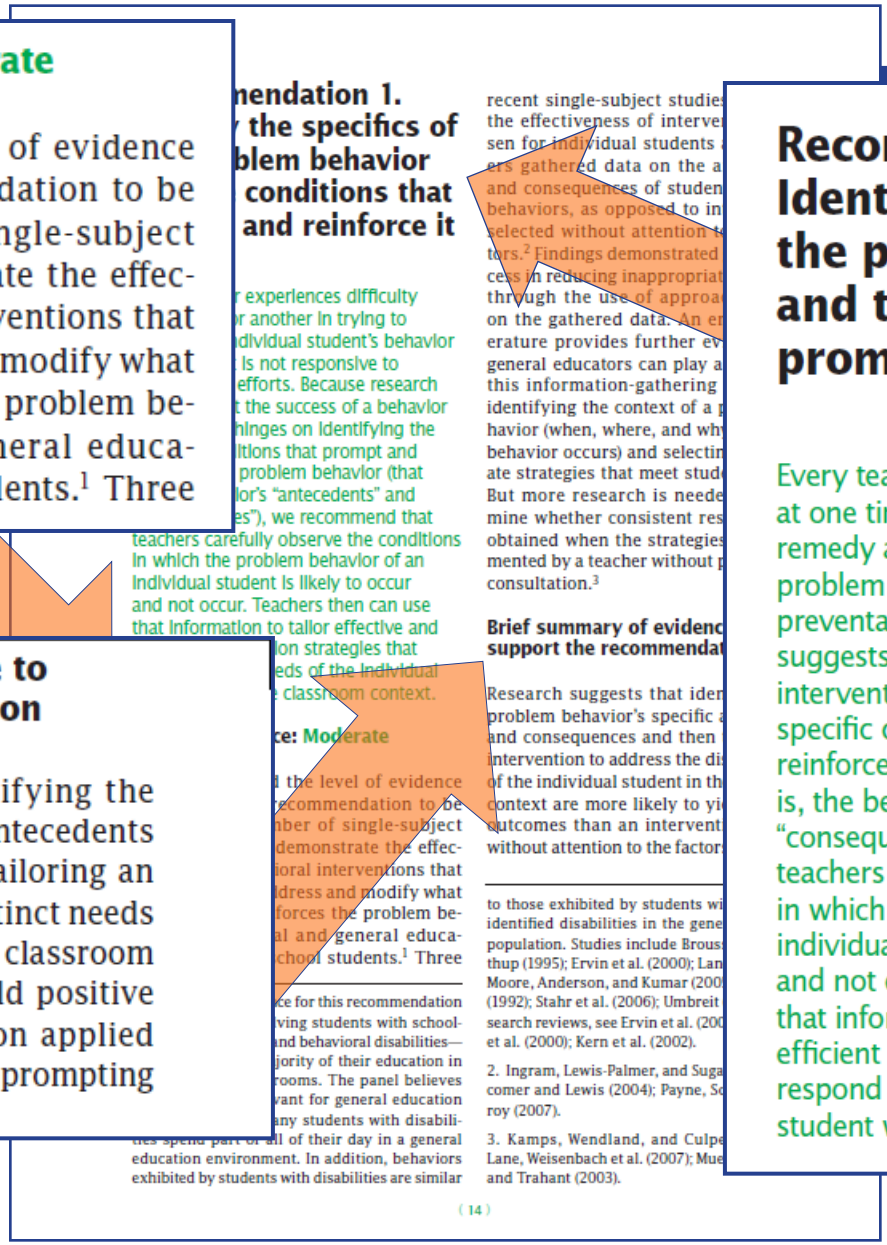
2. Ingram, Lewis-Palmer, and Sugai (2005); Newcomer and Lewis (2004); Payne, Scott, and Con-

Level of evidence: Moderate

The panel judged the level of evidence supporting this recommendation to be *moderate*. A number of single-subject research studies demonstrate the effectiveness of behavioral interventions that are designed to address and modify what prompts and reinforces the problem behaviors of special and general education elementary school students.[1] Three

Brief summary of evidence to support the recommendation

Research suggests that identifying the problem behavior's specific antecedents and consequences and then tailoring an intervention to address the distinct needs of the individual student in the classroom context are more likely to yield positive outcomes than an intervention applied without attention to the factors prompting



Recommendation 1. Identify the specifics of the problem behavior and the conditions that prompt and reinforce it

Every teacher experiences difficulty at one time or another in trying to remedy an individual student's behavior problem that is not responsive to preventative efforts. Because research suggests that the success of a behavior intervention hinges on identifying the specific conditions that prompt and reinforce the problem behavior (that is, the behavior's "antecedents" and "consequences"), we recommend that teachers carefully observe the conditions in which the problem behavior of an individual student is likely to occur and not occur. Teachers then can use that information to tailor effective and efficient intervention strategies that respond to the needs of the individual student within the classroom context.

Nevertheless, the evidence suggests that the practice of understanding a problem behavior's context can yield an effective

- Silvia frequently leaves her seat without permission during small-group instruction.

Checklist for carrying out the recommendations

Recommendation 1. Identify the specifics of the problem behavior and the conditions that prompt and reinforce it

☐ Concretely describe the behavior problem and its effect on learning.

☐ Observe and record the frequency and context of the problem behavior.

☐ Identify what prompts and reinforces the problem behavior.

Recommendation 2. Modify the classroom learning environment to decrease problem behavior

Recommendation 4. Draw on relationships with professional colleagues and students' families for continued guidance and support

☐ Collaborate with other teachers for continued guidance and support.

☐ Build collaborative partnerships with school, district, and community behavior experts who can consult with teachers when problems are serious enough to warrant help from outside the classroom.

☐ Encourage parents and other family members to participate as active partners in teaching and reinforcing appropriate behavior.

Recommendation 5.

raising his hand during whole-class instruction.

- Thanh is physically aggressive toward his peers (hits, kicks, punches) during recess.

9. Evertson, Emmer, and Worsham (2006).

10. Wolery, Bailey, and Sugai (1988) review characteristics of problem behaviors that warrant attention due to the behavior's impact on classroom climate and instructional time.

of the problem, when and where it most often occurs, and how to intervene appropriately. Examples of concrete descriptions of problem behaviors are:

Adjust the difficulty of the problems on the basis of the students' success.

Consequences: If misbehavior occurs, take Michael aside and remind him of behavior expectations during whole-group lessons. Describe how the observed behavior affects students' learning. If behavior persists, give Michael a choice of participating in the lesson or relocating to a designated area to work on problems independently until he is ready to return to the whole group.

As demonstrated in the example, teachers' attention to the antecedents and consequences of reoccurring behavior problems can inform the development of more effective and efficient behavioral support strategies to prevent or reduce behaviors that interfere with successful classroom learning.

Potential roadblocks and solutions

Roadblock 1.1. *"I don't know how to collect all this information about behavior problems when I'm trying to teach a room full of students."* General education teachers in public schools must attend to, on average, more than 20 students in their classroom,[15] so to add data collection responsibilities to their tasks can seem impractical or impossible.

Suggested Approach. We recommend keeping methods of information gathering very simple. For example, if the problem behavior occurs several times a day, we recommend that teachers record occurrences over just a few days. If the problem behavior occurs infrequently (such as a few times a week), we recommend that teachers gather data over one or two weeks to be sure to include enough instances of the behavior to inform a plan for intervention. For daily observations teachers can use a chart of their daily classroom schedule and make a simple tally under the time of day and lesson activity when the target behavior occurs (see table 3).[16] Over time patterns should become apparent, showing when the behavior is more likely and less likely to occur. For a behavior of low frequency teachers can make a very brief entry in a notebook or journal during transition periods (for example, at recess or between lessons) or at the end of the day about the immediate antecedents and consequences of the target behavior (see table 4).[17] After recording and reviewing a number of these observations, teachers should be able to denote patterns in the frequency and triggers of the misbehavior.

Roadblock 1.2. *"This class has so many behavior problems, I don't know where to start."* Students' problem behaviors can be a source of great frustration and confusion to teachers, especially when they are persistent and appear to be inexplicable.

Suggested Approach. Multiple problem behaviors, such as disruption, inattention, and noncompliance, often originate from similar student needs, so by concentrating on one behavior in one setting, teachers may have a positive impact on others. We suggest that the teacher identify one priority behavior problem—not necessarily the most troublesome or disruptive—on which to focus initial efforts. By assessing the antecedents and consequences that prompt and reinforce the problem behavior and developing strategies that specifically link to the underlying function of the student's

15. U.S. Department of Education (2004).

16. The example data collection tool was adapted from O'Neill et al. (1997), p. 29. In table 3, each tally mark represents an occurrence of the high-frequency target behavior.

17. The example data collection tool was adapted from O'Neill et al. (1997), p. 33. Using table 4, teachers can enter information about low-frequency problem behaviors by describing the behavior in concrete terms and its antecedent(s) and consequence(s).

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http://whatworks.ed.gov

PRACTICE GUIDES

FAQ | Suggest a Topic | Guided Tour

Practice guides provide practical recommendations for educators to help them address the everyday challenges they face in their classrooms and schools. Developed by a panel of nationally recognized experts, practice guides consist of actionable recommendations, strategies for overcoming potential roadblocks, and an indication of the strength of evidence supporting each recommendation. IES practice guides are subjected to rigorous external peer review.

Please contact us if you would like to suggest a practice guide topic.

Search Practice Guides

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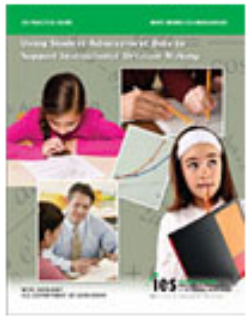
Further limit your search results to include only Practice Guides with the checked characteristics. Remember to click 'Go' when you have finished making your selections.

All Practice Guides (Count = 12)

Practice Guide ▲ | Release Date ⇩

Using Student Achievement Data to Support Instructional Decision Making (1.77 MB)

This guide offers five recommendations to help educators effectively use data to monitor students' academic progress and evaluate instructional practices. The guide recommends that schools set a clear vision for schoolwide data use, develop a data-driven culture, and make data part of an ongoing cycle of instructional improvement. The guide also recommends teaching students how to use their own data to set learning goals.



September 2009

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Visit our partner site!

Learn how to integrate evidence-based practices into classroom instruction.

Questions for Discussion

- How do you use evidence in day-to-day decision-making?
- What are the constraints to using evidence?
- What kinds of evidence are lacking? What would you like to see more of?
- How can the WWC be more useful?